

KNOWLEDGE OF GENERAL DENTAL PRACTITIONERS, POSTGRADUATE RESIDENTS, AND SPECIALISTS FROM VARIOUS DENTAL SPECIALTIES TOWARDS PEDIATRIC DENTISTRY IN PAKISTAN

Abul Khair Zalan¹, Amna Shah Bibi¹, Mehreen Ismail², Anika Gul², Sabeen Masood³, Palwasha Babar⁴, Mir Hadi Faisal⁵

¹Department of Pediatric Dentistry, School of Dentistry, PIMS, Islamabad, Pakistan.

²Department of Orthodontics, Sardar Begum Dental College, Peshawar, Pakistan.

³Department of Operative Dentistry, Altamash institute of Dental Medicine, Karachi, Pakistan.

⁴Department of Pediatric Dentistry, College of Medicine and Dentistry, Lahore, Pakistan.

⁵Islamabad Medical and Dental College, Islamabad, Pakistan.

ABSTRACT

Objective: To find out the Knowledge of general dental practitioners and Specialists from various dental specialties towards pediatric dental care in Pakistan.

Materials and Methods: A cross-sectional, questionnaire study was conducted. The pre-validated questionnaire was distributed among different dentists in Pakistan and responses were evaluated using SPSS 25.

Results: Out of the 372 participants, there were 207 general dentists, 83 operative dentists, 17 prosthodontists, 21 orthodontists and 44 oral surgeons. A greater proportion of operative dentists knew about the recommended medicament for pulpotomy ($n = 30, 36.1\%; p = 0.022$) and the material of choice for restoring multi-surface lesions ($n = 29, 34.1\%; p < 0.001$), as compared to other dentists. However, the number is still low. A greater proportion of orthodontists/prosthodontists and oral surgeons knew about the correct pain control method for mandibular endodontics ($n = 46, 56.1\%; p = 0.007$). A total of 331 (89.0%) dentists did not know the material of choice for restoring one surface lesions.

Conclusion: A very low frequency of dentists had knowledge about the different basic practices of pediatric dentistry. The knowledge of dentists was highly lacking. Pediatric dentistry education at the undergraduate and postgraduate levels should be incorporated.

Key words: Pediatric dentistry, continuing dental education, Evidence based dentistry.

INTRODUCTION

Above 35% of 220 million Pakistani population is below 15 years of age.¹ This significant portion of the population warrants the need for specific health care. Pediatric dentistry or 'dentistry of children'

is a specialty that specifically caters for the dental needs of children.

Despite a decreasing trend in the incidence of child dental caries observed over the past several decades, the global prevalence of caries in children still remains high. These prevalence rates have been reported to be as high as 90% among 3-5-year-old children in certain parts of the world.²

It is important to understand that the dental healthcare of children differs from that of adults. Children often develop deep carious lesions due

Correspondence:

Dr. Abul Khair Zalan

Department of Pediatric Dentistry, School of Dentistry, PIMS, Islamabad, Pakistan

Cell: +92-313-9120745

Email: zalanjan@yahoo.com

to poor oral hygiene and maintenance and if these lesions are left untreated, it can result in pain and infection. Dental caries and the associated pain can affect the nutrition, sleep pattern, behavior and aesthetics of the child and therefore, it is of utmost importance to treat these problems efficiently.³

Chronic infection of the teeth can damage the localized structures such as the developing permanent teeth and if no intervention is carried out at this stage, it can also lead to premature tooth loss. Even though there is an increased understanding of the importance of maintaining the natural dentition and having the modern technologies in the prevention of dental caries, many teeth are still lost prematurely.⁴

Currently, the best accepted practice of restoring the primary teeth is to remove all the carious lesion and placement of either a plastic restoration or a preformed metal crown on the affected teeth.^{3,5} But the actual management of primary teeth varies widely between different dental services. Conventional restorative techniques in pediatric dentistry, such as the placement of a stainless-steel crown has been found to have favorable results when used in specialist clinics and hospitals.⁶ However, these techniques are not quite popular among non-specialist practitioners who are working in general dental practices, where most of the dental care is provided to children.⁷

If the carious lesions are not treated on time, they proceed to form deep lesions which eventually involve the pulp. Endodontic procedure like pulpotomy and pulpectomy are used to treat primary teeth with pulp involvement, the alternate option would be to extract the affected tooth.⁸ The main reason for performing endodontic treatment in primary teeth instead of extracting them is to maintain the dental arch, as preservation of an intact primary tooth until eruption of the permanent successors is crucial in maintaining the integrity of the arch form.⁹ The biggest challenge posed by most dentists while performing endodontic procedures in primary teeth, aside from the complexity of the procedure, is the lack of cooperation by younger patients.¹⁰ This often leads most general dental practitioners to extract the involved tooth rather than trying to preserve it.⁴

Pediatric dentists are specialists who are trained to meet the dental health care needs of children and young adults and serve as an educational resource for the parents. Although many young patients are

treated by these specialists, pediatric patients are still deprived of the basic dental treatments. It is reported that if dentists are better educated in this matter, they are more likely to set up their practice in a way to facilitate the treatment of young patients and have staff members who are more knowledgeable and comfortable in treating children as opposed to dentists who do not have the training.¹¹

Various studies have been carried out on knowledge of general dentists and dentists from different specialties on treatment modalities in primary teeth across the world,^{4,7,9} but no such study has been carried out in Pakistan. Therefore, this study aims to find out the Knowledge of general dental practitioners and consultants from other dental specialties towards various aspects of pediatric dental care in Pakistan.

MATERIALS AND METHODS

A cross-sectional, questionnaire-based study was conducted from Mid-February 2021 to Mid-March 2021 to determine the knowledge of general dental practitioners, postgraduate residents and consultants of other dental specialties towards pediatric dentistry. An approval from Ethical review board was obtained prior to conduction of study. Four items were selected from two different validated questionnaires. The questions assessed the knowledge of the dentists regarding the practice of clinical dentistry. The questions inquired about the medicament used for pulpotomy; the pain control method used during the endodontic treatment of mandibular primary molars; the material of choice for one-surface restorations and the material of choice for multi-surface restorations. The questions were presented in the form of multiple-choice questions. Several options were given to be selected as answers.

Six different options were present for the question regarding the medicament for pulpotomy. Ferric sulphate and MTA were the 'recommended' answer choices. Buckley's diluted formocresol and full strength formocresol were 'outdated' answer choices, while calcium hydroxide and others were 'contraindicated' answer choices. The remaining three questions had either a correct response or an incorrect response. The correct pain control method for endodontic treatment in mandibular teeth was inferior alveolar nerve block. The material of choice for restoring one-surface lesion was resin composite restoration. The material of choice for restoring

multi-surface lesions was stainless steel crowns.

Data of the study entered, and results were analyzed with SPSS v 25.0. Frequencies and percentages were described for categorical variables, such as age groups, gender and answer responses. Chi-squared test was used to compare the answer responses between different dentist groups. Fisher’s exact test was used when frequency was found to be less than five. Value less than 0.05 was considered significant.

RESULTS

A total of 372 dentists were recruited for this study. These included general dentists (n = 207, 55.6%), operative dentistry specialists (n = 83, 22.3%), prosthodontists (n = 17, 4.6%), orthodontists

(n = 21, 5.6%) and oral & maxillofacial surgeons (n = 44, 11.8%). Since the frequency of participating orthodontists and prosthodontists was quite low, they were categorized into a single group for the purpose of data analysis. The sample included 250 (67.2%) female dentists and 122 (32.8%) male dentists. About a quarter of the participants (n = 89, 23.9%) were under the age of 25 years; 272 (73.1%) were between the ages of 25 and 25 years; while only 11 (3.0%) of the participating dentists were above the age of 35 years.

The frequency distribution of the knowledge of the four items related to the knowledge of pediatric dentists has been illustrated in table 1. A greater proportion of operative dentists (n = 28, 33.7%) reported

Table 1 Frequencies of Items showing Knowledge towards Pediatric Dentistry by specialists oof different dental disciplines (* = Fisher’s Exact test was applied)

		Specialty					Chi-Squared Value	P Value
		General Dentistry	Operative	Orthodontics/ Prosthodontics	Oral & Maxillo-facial Surgery	Total		
What medication do you use for pulpotomy treatment?	Contraindicated	70 (33.8%)	38 (45.8%)	15 (39.5%)	17 (38.6%)	140 (37.6%)	20.14	0.003
	Outdated	93 (44.9%)	17 (20.5%)	16 (42.1%)	22 (50.0%)	148 (39.8%)		
	Recommended	44 (21.3%)	28 (33.7%)	7 (18.4%)	5 (11.4%)	84 (22.6%)		
Which pain control method do you prefer for endodontic procedure in mandibular molars?	Correct	72 (34.8%)	39 (47.0%)	22 (57.9%)	24 (54.5%)	157 (42.2%)	12.04	0.007
	Incorrect	135 (65.2%)	44 (53.0%)	16 (42.1%)	20 (45.5%)	215 (57.8%)		
What is your material of choice for one surface lesions in primary teeth?	Correct	23 (11.1%)	10 (12.0%)	2 (5.3%)	6 (13.6%)	41 (11.0%)	1.66*	0.667
	Incorrect	184 (88.9%)	73 (88.0%)	36 (94.7%)	38 (86.4%)	331 (89.0%)		
What is your material of choice for restoration of multi-surface lesions in primary molars?	Correct	32 (15.5%)	29 (34.9%)	6 (15.8%)	8 (18.2%)	75 (20.2%)	14.66	<0.001
	Incorrect	175 (84.5%)	54 (65.1%)	32 (84.2%)	36 (81.8%)	297 (79.8%)		
	Total	207 (100%)	83 (100%)	38 (100%)	44 (100%)	372 (100%)		

using the recommended medicament for pulpotomy, as compared to other dentists ($p = 0.003$). A greater proportion of orthodontists/prosthodontist and oral & maxillofacial surgeons reported using the current pain control method for endodontic procedures in mandibular molars, as compared to general dentists and operative dentists ($p = 0.007$).

When asked about the material of choice for one surface restorations in primary teeth, there was no significant difference in the frequency proportions of different dentists who selected the correct material of choice ($p = 0.667$).

The proportion of operative dentists ($n = 29$, 34.9%) who selected the correct material of choice for multi-surface restorations was significantly greater than the other dentist groups ($p < 0.001$).

DISCUSSION

The study set out to assess the knowledge of different dentist groups in the clinical practice of pediatric dentistry. The major proportion of dentists was relatively young with 73.1% ($n = 272$) of the participants being between the ages of 25 and 35 years.

There are many medicaments available for use in pulpotomies. According to a systematic review carried out by Bossu et al.,¹² Mineral trioxide aggregate (MTA), Biodentine and ferric sulphate yield good clinical results over time and can be used safely in the pulpotomies of primary molars. Among these, MTA is the recommended material. On the contrary, calcium hydroxide has the worst clinical performance. Formocresol, although clinically successful, is composed of formaldehyde which has been declared carcinogenic by the International Agency for Research on Cancer.¹³ Buckley's formocresol is a diluted solution containing 19% formaldehyde but it is still considered carcinogenic and should be replaced by other materials.¹⁴

Operative dentistry specialists reported the greatest response for selecting the recommended medicament for pulpotomy ($n = 28$, 33.7%; $p = 0.0203$). The other groups had lower frequency responses. However, it is quite interesting to observe that among the operative dentists, 33.8% ($n = 70$) selected the 'contraindicated' medicaments and 44.9% ($n = 93$) selected the 'outdated' medicament for pulpotomy. Moreover, only 21.3% ($n = 44$) of the general dentists chose the 'recommended' medica-

ment for pulpotomy. Overall, only 22.6% selected the 'recommended' medicament for pulpotomies in primary teeth. This clearly indicated the gross lack of knowledge of clinical pediatric dentistry among dentists in Pakistan.

The type of restoration placed on primary teeth is determined by the location and extent of the carious lesion. Composite resins are the most desirable esthetic materials with excellent physical and mechanical properties.¹⁵ Composite is the material of choice for filling primary anterior teeth as they provide an aesthetic and durable restoration.¹⁶ In a study reported by Guelmann, most of the dental practitioners in the United States use composite resins for class I and II restorations in primary molars.¹⁷

There was no difference in the frequency distribution of the responses to the material of choice for restoring one-surface lesions ($p = 0.667$). A total of 331 (89.0%) of all the participants selected the incorrect answer choices. A total of 23 (11.1%) general dentists knew the material of choice for restoring one-surface lesions. Overall, only 41 (11.0%) of the dentists knew that composite resin was the material of choice for one-surface restorations in child patients. According to a study conducted in Saudi, the material of choice for placing in carious lesions extending to the dentin by most dentists was GIC followed by composite and the preferred material for deep lesions extending close to the pulp and single surface proximal lesions was amalgam followed by composite resin.¹⁸

The best treatment option for restoring multiple surface lesions in primary teeth is removal of all carious lesion and placement of stainless-steel crown.^{3,5} Stainless steel crowns have been reported as preferred method of restoring grossly carious primary teeth by many studies.^{18,19} A greater proportion of operative dentists ($n = 29$, 34.9%; $p < 0.001$) selected the correct material of choice for restoring multi-surface lesions than other dentists. More operative dentistry specialists may have had this knowledge because of similarity of operative dentistry training with pediatric dentistry. However, a frequency of 34.9% knowing about the material of choice is a low number. A total of only 32 (15.5%) general dentists knew the correct material of choice for restoring multi-surface lesions in primary teeth. If three-quarters of the dentists do not even know

the correct material of choice, then we would expect them to practice evidence-based dentistry in child patients.

Mandibular infiltration has been routinely avoided in treating mandibular molars because of its questionable adequacy (Oulis et al 1996).²⁰ Buccal infiltration and block anesthesia are equally effective in carrying out most dental procedures like amalgam filling and placement of stainless-steel crowns in primary teeth but prove to be unreliable during pulpotomy and extractions.²¹

A significantly greater number of orthodontists/prosthodontists (n = 22, 57.9%) and oral & maxillofacial surgeons (n = 24, 54.5%) than the other dentists selected the correct pain control method for performing endodontic treatment in mandibular teeth. Since operative dentists are expected to perform more endodontic procedures, a greater number of them were expected to have correctly answered this question. However, only 39 (47.0%) operative dentists selected inferior alveolar nerve block as the pain control method for endodontic treatment in mandibular teeth. A total of 135 (65.2%) general dentists selected the incorrect answer options for these questions. Overall, the majority of the dentists got this question wrong as well (n = 215, 57.8%). These results are quite alarming, since dentists are expected to perform endodontic procedure quite regularly. Not knowing a step as basic as the recommended anesthesia method for endodontic procedures would compromise the whole treatment process, possibly leading to an overall poor patient experience.

CONCLUSION

All of these results are indicative of the dire lack of knowledge of clinical pediatric dentistry among dentists. The findings of this study should be used to inform decisions to introduce more postgraduate programs in pediatric dentistry all over Pakistan. Therefore, CDE courses for dentists should also be introduced. As a community, dentists need to understand the gap between the dental needs and oral health care facilities provided to the pediatric population of Pakistan.

LIMITATION OF THE STUDY

The current study had a few limitations. Firstly, the sample size was relatively small. Also, only four questions were used in this study to assess the

knowledge of pediatric dentistry among dentists. Future studies should employ a larger sample and use more questions for knowledge assessment.

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